


What is claimed is:

1. A playing motion capturing apparatus, comprising: 

5 a photorelector disposed in a position on a string instrument where a player presses strings with fingers, the photorelector including a plurality of light emitting elements and a plurality of light receiving elements;

a light emitting element driving unit which turns the respective light emitting elements on and off;

10 a light receiving signal processing unit which outputs a light receiving signals of the light receiving elements and an identification number of the light receiving element;

a string vibration detecting unit which detects vibrations of the strings; and

15 a fingering information obtaining unit which obtains a vibration signal from the string vibration detecting unit, and the light receiving signal and the identification number from the light receiving signal processing unit.

20 2. The playing motion capturing apparatus according to claim 1, wherein the light emitting elements emit light in a cycle relating to the tempo of a musical piece.

3. The playing motion capturing apparatus according to claim 1, wherein
25 the light receiving elements receive light in a cycle relating to the tempo of a musical piece, the light is emitted by the light emitting element and then


reflected by player's finger.

4. The playing motion capturing apparatus according to claim 1, wherein
the light emitting element is a light emitting diode which emits red, green,
5 and blue light.

5. The playing motion capturing apparatus according to claim 1, wherein
the light receiving element is a phototransistor.

10 6. The playing motion capturing apparatus according to claim 1, wherein
the string vibration detecting unit is a piezoelectric pickup provided at a
bridge portion of the string instrument.

7. The playing motion capturing apparatus according to claim 1, wherein
15 the string instrument is a guitar.

8. A fingering analysis apparatus, comprising: 

a receiving unit which receives a vibration signal of each string of a
string instrument and identification numbers and light receiving signals of
20 a plurality of light receiving elements along a time series;

a light receiving element number discriminating unit which
discriminates the identification number of the light receiving element that
outputs a light receiving amount equal to or greater than a predetermined
amount based on the light receiving signal from the receiving unit when
25 the vibration signal exceeds a predetermined value;

a finger position identifying unit which judges a position of a

pressing finger from the identification number of the discriminated light receiving element; and

a fingering information saving unit which saves a result of judgment by the finger position identifying unit along the time series.

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9. A fingering analysis apparatus, comprising: /

a receiving unit which receives a vibration signal of each string of a string instrument and identification numbers and light receiving signals of a plurality of light receiving elements along a time series;

10 a finger number judging unit which performs color identification of a finger pressing the string based on the light receiving signal from the receiving unit when the vibration signal exceeds a predetermined value, and judges a finger number of the pressing finger from preset color-to-finger-number information;

15 a finger position identifying unit which judges a position of the pressing finger from a coordinate position of a photorelector detecting the finger number; and

a fingering information saving unit which saves the finger number and the position of the pressing finger along the time series.

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10. A string instrument for playing motion capturing, comprising: /

a photorelector disposed in a position on a string instrument where a player presses strings with fingers, the photorelector including a plurality of light emitting elements and a plurality of light receiving elements; and

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a string vibration detecting unit which detects vibrations of the

plurality of strings.

11. The string instrument for playing motion capturing according to claim
10, wherein the light emitting element is a light emitting diode which emits
5 red, green, and blue light.

12. The string instrument for playing motion capturing according to claim
10, wherein the light receiving element is a phototransistor.

10 13. The string instrument for playing motion capturing according to claim
10, wherein the string vibration detecting unit is a piezoelectric pickup.

14. A string instrument for practicing fingering, comprising: /
light emitting elements disposed in a position where a player
15 presses strings with fingers, the light emitting elements emitting red,
green and blue light;

a light emitting element driving unit which turns the light emitting
elements on and off; and

an interface which inputs a turn-on instruction and a turn-off
20 instruction for the light emitting elements to the light emitting element
driving unit.